

PATENT SPECIFICATION

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(54) IMPROVEMENTS IN AND RELATING TO REINFORCED SHEETING

(71) I, FREDERICK WILLIAMS, a British Subject of 32, Albany Road, Norton, Stockton, Teesside, formerly of 23, Collins Avenue, Norton, Stockton, Teesside, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:

10 This invention concerns improvements in and relating to reinforced sheeting.

Sheeting and especially plastics sheeting such as polythene sheet is widely employed 15 as a covering material in the building and gardening trades and suffers from the disadvantages that large sheets are handled with difficulty and are liable to be torn during folding or when blown by the wind.

20 An object of the invention is to reinforce sheeting so that it will be less unwieldy and more readily handled.

According to the invention sheeting comprises a sheet reinforced by spaced apart 25 elongated stiffeners each stiffener comprising a male member and a female member, the sheet being held between said members, the male member comprising a generally T sectioned strip having a longitudinally extending bead connected to the median region of a strip by a waisted portion extruded around a wire core which extends axially of said bead, and the female member comprising a flexible horse shoe sectioned strip defining a 30 channel section with a neck which is narrower than the widest part of the channel and receives said bead in said channel and grips said waisted portion with said neck, said female member providing a complementary cover strip for said male member.

The complementary cover strip may be formed from a hard plastics material for example polyethylene and have a pair of extruded flanges for securing the sheeting, 45 for example to a greenhouse frame to which

[Price 33p]

the cover strip is attached. Clips may also be provided with a groove for attachment over the cover strips, for securing the sheeting for example to the ground in which case a peg may be attached to a clip.

50 The stiffness may have their ends spaced from one or both sides of the sheet adjacent the ends.

The wire core may comprise a length of metal wire or rod which may be of T shaped section for example of steel and usually high tensile steel wire which may have a diameter of about one eighth of an inch or No. 10 gauge T section.

55 Two layers of sheet may be provided reinforced by common stiffeners and in this case the stiffeners may be close together so that elongated bags are provided which may be sealed at one edge of the sheeting to close the end of a bag; one of the sheets may be 60 perforated to allow of the passage of warm air for use for example in market gardening, e.g. as covering for cloches, cold frames or greenhouses, when the perforated sheet will be provided on the inner side of the cover.

70 Normally the stiffeners are spaced apart by a distance less than the width of the sheeting, for example in the case of sheeting thirty feet wide for covering a sports ground the stiffeners may be spaced ten or fifteen 75 feet apart whilst in the case of sheeting eight feet wide for example for covering cloches in market gardens the stiffeners may be spaced six feet apart and for providing the covering of greenhouses may be one to two feet 80 apart.

Reinforced sheeting according to the invention may readily be rolled and unrolled longitudinally or folded without undue kinking and consequent damage and in use 85 there is in effect an elongated press stud arrangement with the first and second parts of the stiffeners whereby the sheeting may be held taut in the required position.

The invention includes a shelter, for ex- 90

ample a greenhouse, comprising supporting spaced apart members with the sheeting connected thereto and its transverse stiffeners extending between adjacent supporting members.

Two sheets are preferably provided, the main sheet being perforated, and a conduit maybe secured to one of the frame members with branch outlets projecting therefrom between the sheets, of the sheeting and between adjacent stiffeners. In use warm air is blown through the conduit, to issue through the perforations in the main sheet, by connection of a fan heater to the lower end(s) of the conduit.

The invention will be further described by way of example with reference to the accompanying drawings in which:-

Fig. 1 shows two parts of a stiffener before attachment along their length to one or more sheets.

Fig. 2 is a detail view of sheeting provided with the stiffener of Fig. 1.

Fig. 3 shows sheeting and clips in use covering a sports ground.

Fig. 4 shows a greenhouse the covering of which is provided by sheeting reinforced by spaced apart stiffeners of Fig. 1 employed also as connectors.

Fig. 5 is a broken detail view in part section showing connection of the sheeting to the greenhouse of Fig. 4 and

Fig. 6 is a sectional detail view of the sheeting on line X-X of Fig. 5 provided with the stiffeners of Fig. 1.

In Figure 1 co-operative two part stiffeners 4; 5 is shown, an arm of a T section polyethylene male stiffener part 5, extruded around a wire 50, having a waisted portion 40 with a pair of flanges having a common outer flat surface 51 and co-operating with a second part of the stiffener being a female member or cover strip 4 having a co-operative groove the side edges of which engage the sheet 1 as shown in Figure 2 against the waisted portion of stiffener first part 5. The use of cement for bonding to the sheet is not essential and clips 3 in Figure 3 may be provided on the cover strip 4 which 50 itself has a waisted portion.

The sheeting shown in Fig. 3 covering part of a football pitch has the ends of the stiffeners spaced from one side D of the sheets 1, the other sides being laid together 55 on a perforate pipe 6 some six inches in diameter for introduction and distribution of warm air beneath the sheeting. The sheeting is tethered by pegs 32 provided on cords 31 of clips 3 and stuck in the ground. The side 60 regions D facilitate overlapping with similar side regions of adjacent sheets (not shown), with which they may be turned up and clipped together, and provide for drainage of rainwater longitudinally of the sheeting.

65 In the greenhouse shown in Fig. 4 the

width of the sheeting corresponds to the spacing of end frames 7 along which gripping members 15 corresponding to the first parts of stiffeners 5, are longitudinally connected. The ends of the transverse stiffeners 70 4 and 5 are spaced from the sides of the sheeting leaving margins for connection, over the gripping members 15 on the frames 7, by cover strips 14 corresponding to the cover strips of the stiffeners 4.

A conduit 8 at each side is attached beneath one end frame 7 along the wall and roof portions and connected to a fan heater 10; branch outlet tubes 9 are provided along the conduits 8 at one foot intervals.

In addition to the sheet 1 an inner perforate sheet 11 is provided in the sheeting, the sheets 1, 11 being connected by transverse stiffeners 4 and 5 at one foot intervals.

In covering the greenhouse frames, which includes members (not shown) joining the end frames 7 at the ridge of the roof and tops of the walls, a roll of the sheeting is unrolled between the end frames with the 90 ends of the transverse stiffeners supported on them and the margins are connected by pressing cover strips 14 over the margins of the sheet 1 onto the gripping members 15, the edges of the inner perforate sheet 11 95 being pulled inwardly under the tubes 9 whilst the sheets are slack.

WHAT I CLAIM IS:-

1. Sheetng comprising a sheet reinforced by spaced apart elongated stiffeners, each 100 stiffener comprising a male member and a female member, the sheet being held between said members, the male member comprising a generally T-sectioned strip having a longitudinally extending bead connected to the median region of a strip by a waisted portion extruded around a wire core which extends axially of said bead, and the female member comprising a flexible horse shoe sectioned strip defining a channel section 110 with a neck which is narrower than the widest part of the channel and receives said bead in said channel and grips said waisted portion with said neck, said female member providing a complementary cover strip for 115 said male member.

2. Sheetng as claimed in claim 1 in which the sheet and/or the stiffeners is/are least partly formed from polyethylene.

3. Sheetng as claimed in Claim 1 or 120 Claim 2 in which the stiffeners are provided with co-operative clips having a groove for attachment over the cover strips for securing the sheeting and having a cord secured to each clip.

4. Sheetng as claimed in Claims 2 or 3 having clips with a groove for attachment over the beads or cover strips.

5. Sheetng as claimed in Claim 3 in which the male member of the stiffeners or 130

the cover strips have a pair of extruded flanges.

6. Sheeting as claimed in any of the preceding claims in which the stiffeners have their ends spaced from one or both sides of the sheet adjacent the ends.

7. Sheeting as claimed in any of the preceding claims having two layers of sheet reinforced by common stiffeners.

10 8. Sheeting as claimed in Claim 7 in which one of the sheets is perforate.

9. Sheeting substantially as described with reference to and as illustrated in any of the accompanying drawings.

10. A shelter comprising spaced apart 15 supporting members with sheeting according to any of the preceding claims connected thereto and with its transverse stiffeners extending between adjacent supporting members.

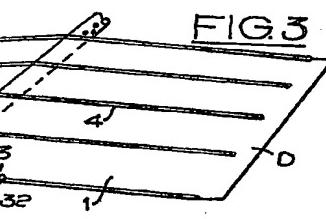
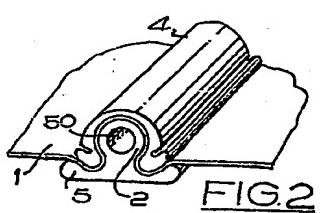
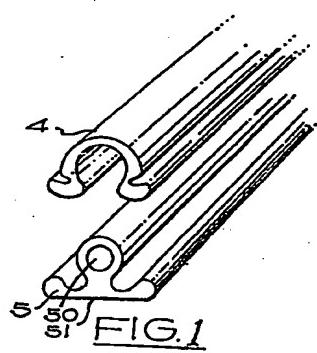
20 11. A greenhouse substantially as described with reference to and as illustrated in Figs. 6, 7 and 8 of the accompanying drawings.

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Sheet 1



1384872 COMPLETE SPECIFICATION

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Sheet 2

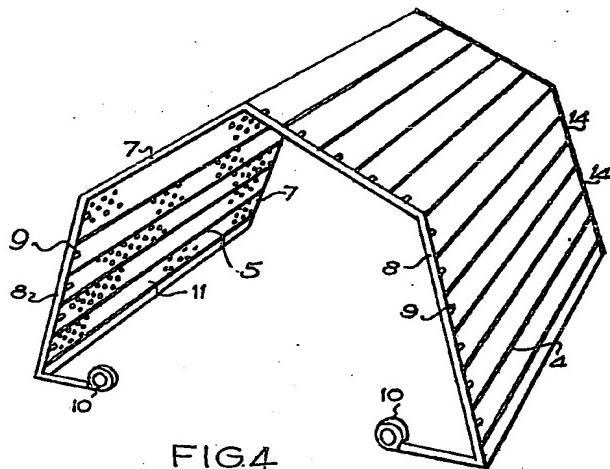


FIG.4

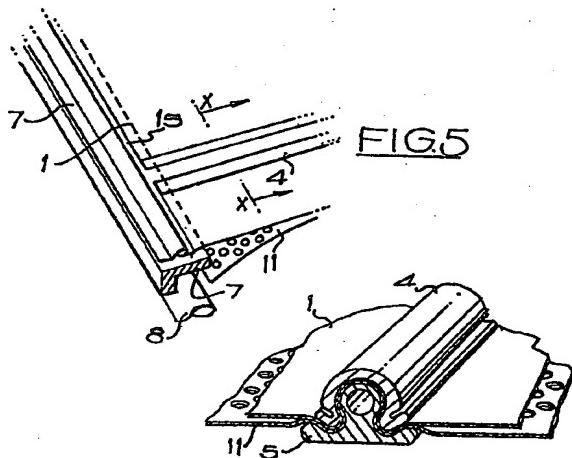


FIG.5

FIG.6